Christopher N. Anderson

EDUCATION
Ph.D - Applied Science & Technology, University of California, Berkeley, CA 2009
MS - Optical Engineering, University of Arizona, Tucson, AZ 2005
BS - Optical Science & Engineering, University of California, Davis, CA 2004

EXPERIENCE
Project Scientist: Center for X-Ray Optics, Lawrence Berkeley National Lab, Berkeley, CA, 7/09-present
Research, development, and operations management for nanolithography systems:

- Managed EUV lithography user operations program through 2X expansion of uptime/user shifts
  - Maintained and expanded status as the world's leading EUVL materials research center.
  - Developed new capabilities allowing the system to achieve a world record resolution of 14 nm.
  - Supervised a six-person team working a continuous 24/4 work week. Developed task allocation strategies, documentation of expectations, and a culture that fostered the high level of safety, efficiency, accountability, and teamwork required to meet the program's demanding needs.
  - Designed, developed, and maintained logistics web applications used to power scheduling, communication, documentation, shipping, and sample tracking for the program's world-wide user base.
- Played a major role in the design, development, metrology and commissioning of unique scientific instrumentation:
  - a $20M EUV materials research center at ALS sector 12 (ongoing)
  - an $8M EUV reticle inspection microscope installed at Samsung in S. Korea,
  - an EUV materials sensitivity measurement system at ALS sector 12,
  - the illuminator of the 0.3-NA EUV lithography system at ALS sector 12.
- Developed holographic techniques to arbitrarily shape and homogenize high-coherence EUV sources.
- Developed passive and active optical elements to synthesize desired temporal and spatial coherence properties of EUV illumination systems.
- Designed, developed, and maintained control software used for 24/7 robust operation of EUV lithography systems at ALS sector 12.
- Represented LBNL at key scientific meetings. Presented hallmark paper identifying key resist challenges for EUV lithography extension to 6.x nm optical wavelength
- Improved CXROs scientific outreach through a new website, cxro.lbl.gov, and digital/print media including marketing/outreach posters and brochures. Received an Outstanding Performance Award for this work.

Research Assistant: University of California, Berkeley, CA 9/05-7/09 - Advisor David Attwood
Performed original research, analysis, and computer modeling in the area of EUV lithography:

- Developed a linear systems approach to the quantitative characterization of the fundamental resist property of deprotection blur and applied it to the study of EUV resist materials.
- Developed a method for in-situ characterization of imaging system wavefront data using a holographic mask for the parallel probing of pupil second derivative data. .
- Developed generalized alignment theory for incoherent beam interference and studied the application to sub-10-nm EUV interference lithography.

Research Assistant: Lawrence Livermore National Laboratory, Livermore, CA 6/03-9/04
Performed original research in the area of non-linear optics:

- Co-developed and successfully implemented a new broadband quasi-phase-matching technique.
- Designed beam profiling apertures for the Mercury laser system.
- Developed software integrating Matlab and Autocad to automate creation of lithography masks.

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Teaching Assistant:
University of California, Berkeley, CA 1/06-1/08: Fourier Optics and Optical Engineering courses
University of Arizona, Tucson, AZ, 8/04-6/05: Introduction to Computer Programming

Technician: Anderson Automotive, Santa Rosa, CA 1995-2002
General automotive repair including engine, exhaust, suspension, drivetrain, and electrical systems.

AREAS OF EXPERTISE
Fourier optics, coherence theory / statistical optics, interferometry, probability theory, statistical data analysis, scientific programming/modeling, instrument control programming, database design, and web programming.

RESEARCH INTERESTS
Extreme ultraviolet (EUV) exposure/inspection systems, coherence engineering, novel wavefront metrologies, and EUV materials characterization.

PUBLICATION LIST AVAILABLE ON REQUEST

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